



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

SR-6J

April 11, 2014

VIA ELECTRONIC MAIL AND CERTIFIED MAIL

Weyerhaeuser Company
Attention: Richard Gay
810 Whittington Ave.
Hot Springs, AR 71902

Re: Plainwell Mill, Operable Unit #7, Allied Paper, Inc./Portage Creek/Kalamazoo River
Superfund Site -- EPA Comments on Feasibility Study Revision 1, dated December 2013

Dear Mr. Gay:

Pursuant to the Consent Decree for the Design and Implementation of Certain Response Actions at Operable Unit #4 and the Plainwell Inc. Mill Property of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site (site), Conestoga-Rovers & Associates, Inc. (CRA), Weyerhaeuser Company's (Weyerhaeuser) environmental consultant, submitted a Feasibility Study (FS), Revision 1 on December 23, 2013 for Weyerhaeuser.

After reviewing your submittal, the United States Environmental Protection Agency (EPA) disapproves the FS Revision 1 and provides EPA's comments in the Enclosure. However, EPA suggests revising the FS such that it pertains only to soil and soil alternatives at the site and that the information in the FS relating to groundwater be removed and reserved until after the remedial action for soil has taken place. If the FS is revised in this manner, a paragraph should be included in the FS explaining that groundwater will be addressed at a later time and that the FS pertains only to soil at the site. Additional groundwater sampling would need to be conducted to determine the effects of the soil remedy on groundwater and a risk assessment will need to be conducted to determine whether a groundwater risk remains at the site. Also, during this time Monitored Natural Attenuation can be properly analyzed as a potential remedy for groundwater at the site if groundwater still presents a risk. If it is determined that a groundwater remedy is necessary, an FS addendum can be submitted for groundwater and the enclosed comments that pertain to groundwater can be addressed.

Per the Consent Decree, a revised FS that corrects all the deficiencies must be submitted within 30 days of receipt of this letter for review. If you have any questions or comments regarding this letter, please contact me at (312) 353-4150 or via email at desai.sheila@epa.gov.

Sincerely,



Sheila Desai
Remedial Project Manager

Enclosure

cc: J. Saric, EPA (e-mail)
P. Bucholtz, MDEQ (e-mail)
G. Carli, CRA (e-mail)
J. Quigley, CRA (e-mail)
J. Lifka, SulTRAC (e-mail)
N. Wood, EPA (e-mail)

**EPA COMMENTS ON FEASIBILITY STUDY REPORT (REVISION 1)
PLAINWELL MILL SITE, OPERABLE UNIT 7 OF
ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SITE
PLAINWELL, ALLEGAN COUNTY, MICHIGAN**

The Feasibility Study (FS) Report Revision 1 dated December 23, 2013 was prepared by Conestoga-Rovers & Associates, Inc., (CRA) for Weyerhaeuser Company (Weyerhaeuser), the signatory to the Consent Decree for the site. The U.S. Environmental Protection Agency's (EPA) general and specific comments are presented below. The first complete paragraph on each page is identified as "Paragraph 1." An incomplete paragraph at the top of a page (one that carries over from the previous page) is identified as "Paragraph 0."

CRA's responses to EPA's November 1, 2013 comments on the draft FS report dated June 2013 were reviewed. EPA's response to comments is below and additional comments on the FS Revision 1 follow.

Response to EPA Comments

1. **Response to EPA General Comment 9, 14, 15, 16, 18, 19 and Specific Comment 8.**
The response states that this comment is no longer relevant due to the evaluation of background concentration. See Appendix C comments regarding background and revisit comment if necessary.
2. **Response to EPA General Comment 10.** The response states that a discussion of the synthetic precipitation leaching procedure (SPLP) analysis and comparison to the Michigan Act 451, Part 201 Generic Cleanup Criteria (Part 201) has been included in Section 1.2.4.2, and a discussion of how groundwater protection criteria including "failed" SPLP results are addressed through the alternatives appears in Section 3.2.1 of the revised FS report. A discussion of failed SPLP results was included in Section 1.2.4.2 but was not included in Section 3.2.1 as stated in the response. Section 3.2.1 should be revised to include a discussion of how groundwater protection criteria including "failed" SPLP results are addressed through the alternatives.
3. **Response to EPA General Comment 20.** The response states that required asbestos abatement is discussed in Section 4.0 of the revised FS report. However, a discussion of asbestos abatement was not included in Section 4.0 as stated in the response and should be added to the text.
4. **Response to EPA Specific Comment 4.** This comment recommended that the table that was provided to EPA and Michigan Department of Environmental Quality (MDEQ) at the meeting in Plainwell be added to the FS. The table summarized which contaminants of concern (COCs) exceeded risk levels (not just arsenic). A copy of the provided table is attached. The majority of the information provided in the table is listed in the text in Section 1.2.5, however the table is easier to read and understand and also provides different or additional contributors than what is listed in the paragraph. Why were some of the major contributors not included in the Section but included in the table?

This comment pertains to text presented in Section 1.2.5 of the draft FS report. By addressing this comment, the revised FS report inadvertently now contains two sections titled Section 1.2.5 (Contaminant Fate and Transport and Baseline Human Health Risk Assessment). This organizational error should be corrected in Section 1.0 and in the table of contents.

5. **Response to EPA Specific Comment 9.** The comment requested the addition of 40 Code of Federal Regulations (CFR) 761.61 to Section 2.1 as an applicable or relevant and appropriate requirement (ARAR). The response states that the FS report has been modified accordingly to address the comment; however, the changes do not appear in Section 2.1. Either the change described in the response should be made in Section 2.1, or further clarification is needed as to how this comment was addressed.
6. **Response to EPA Specific Comment 10.** This comment discusses the applicability of Toxic Substances Control Act (TSCA) as a chemical-specific preliminary remediation goal (PRG) and the response provided in Section 2.2 is unacceptable. See Specific Comment 11.
7. **Response to EPA Specific Comment 12.** The response states that Section 2.3 was revised to include implementation of a soil management plan during redevelopment activities. The revised FS report briefly mentions a soil management plan in Section 4.1.2. Discussion of a soil management plan (as well as most of the other information presented in the response to this comment) was not included in Section 2.3. Section 2.3 should be revised to include the relevant information provided in the response to this comment.
8. **Response to EPA Specific Comment 19.** The response states that specific information regarding ICs is presented in Section 4.1 of the revised FS report. This response is misleading because Section 4.1 refers only to Table 4.1 (IC matrix), and does not discuss or summarize ICs. A discussion or summary of ICs should be provided in Section 4.1. For more information on ICs see EPA guidance: "*Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*", December 2012, OSWER 9355.0-89, EPA-540-R-09-001
9. **Response to EPA Specific Comment 29.** The response states that the reference to containment systems has been removed in the revised FS report. Section 5.3.3 (top of page 182 of the revised FS report) states that long-term effectiveness and permanence of all other alternatives (other than no action) depend on the design, operation, maintenance, and monitoring of the containment systems, and on compliance with ICs. Because only soil alternative 2 includes on-site containment, it is still not clear to what containment system soil alternative 3 refers. Either the text should be revised to clarify this matter, or the words "all other alternatives" should be revised accordingly.
10. **Response to EPA Specific Comment 30.** The response states that a discussion comparing costs (including operation and maintenance [O&M] costs) is incorporated in

Section 5.3.7 of the revised FS report. A discussion of these costs was not included in Section 5.3.7 and should be provided.

General Comments

1. The Part 7 Cleanup Criteria Rules were rescinded on December 31, 2013. Taking their place are new cleanup criteria rules, numbered from 299.1 to 299.50, which became effective on December 30, 2013. Some groundwater and soil cleanup criteria and screening levels have changed as compared to the previous September 28, 2012 release of these tables under the Part 7 rules. Please update the FS accordingly.
2. The FS text refers to an iterative approach to arsenic remediation and states that soil verification sampling will accord with Michigan Part 201 requirements in "Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria" as applicable. Although additional information is presented in Appendix A, the FS text does not describe or explain the term "iterative approach." The text should explain the term "iterative approach" and how the approach will be implemented. In addition, the text should state that soil verification sampling will comply with requirements specified in the Michigan Department of Natural Resources' (MDNR) Verification of Soil Remediation (Revision 1) guidance as applicable, and a complete reference to the guidance should be provided.
3. In several places in the revised FS (Sections 3.1.2, 3.3, 4.1.4, 5.2.4, 5.2.5 and other relevant Sections, Tables, and Figures), it mentions monitored natural attenuation (MNA) or that the contaminants will attenuate naturally. If MNA is to be considered as a remedy at the site, it needs to follow EPA guidance on MNA and demonstrate that it can be achieved before being selected as a remedy or even being included as a viable remedial alternative. How will the contaminants be reduced by MNA? A tiered analysis needs to be conducted to determine if MNA is a viable option. EPA has not seen any evaluation of MNA as a viable remedy for this site. If MNA is to be considered as a viable remedy then it needs to be demonstrated that the contaminants will actually attenuate in a reasonable timeframe. A discussion on how MNA is appropriate for the site would need to be included in the FS. Some of the guidances for MNA are: "*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*," April 1999. Final OSWER Directive, Publication EPA/540/R-99/009, "*Monitored Natural Attenuation of Inorganic Contaminants in Ground Water Volume 1 - Technical Basis for Assessment*" October 2007. National Risk Management Research Laboratory (NRMRL), Cincinnati, Ohio, Publication EPA/600/R-04/027, "*Monitored Natural Attenuation of Inorganic Contaminants in Ground Water Volume 2 - Assessment for Non-Radionuclides Including Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Nitrate, Perchlorate, and Selenium*", October 2007, National Risk Management Research Laboratory (NRMRL), Cincinnati, Ohio, Publication EPA/600/R-07/140.
4. In Sections 4.1, 4.1.5, and any other relevant section/table in the document, the groundwater alternatives have been revised to include (1) no action and (2) institutional controls (IC). The text in the fifth paragraph on Page 166 states: "Natural attenuation of

COCs would likely occur. Groundwater monitoring will be performed at the Site to evaluate and document the natural degradation of impacts from COCs across the site.” Based on this statement, the title of Alternative 2 should be revised to “institutional controls and monitored natural attenuation” because monitoring will be conducted to evaluate and document natural degradation of site contaminants. See General Comment 3 regarding MNA. Note that for remedies, ICs and groundwater monitoring with source removal is a different remedy than ICs, MNA, and source removal. It is not clear in the FS if the remedies are referring to the former or the latter or both.

5. Each alternative should have one figure of the entire site with the conceptual excavation areas located on them and then be broken out into more detailed figures by redevelopment area such as seen in Figures 3.1-3.40. Recommend adding a figure with the conceptual excavation areas for the entire site for each alternative as well.
6. For Alternatives 2A and 3A, it is not clear whether you are excavating to land use criteria or residential criteria. (Sections 3.2.1, 4.1.2, 4.1.3, 5.2.2, 5.2.3, etc.). Please clarify in the text.
7. It is also not clear what the difference is between Part 201 Generic Residential and Non-Residential Cleanup Criteria and Part 201 Generic Cleanup Criteria. If you are referring to the same cleanup criteria, use one terminology and be consistent throughout. The more specific “Part 201 Generic Residential and Non-Residential Cleanup Criteria” is preferred.
8. In the FS, various COCs were not carried through the FS and corresponding PRGs are not listed, and no discussion is given. For instance, there are exceedances shown in Section 1.2.4 of chromium in groundwater and a human health risk for chromium yet there is no discussion why there is no PRG for chromium in the FS and why it was eliminated. The same goes for various other COCs in the FS. A section on COCs carried through the FS should be present. The section should discuss any COC that is eliminated and the justification as to why it was eliminated.
9. If generic Part 201 Groundwater Surface Water Interface (GSI) criteria are exceeded, a mixing zone evaluation needs to be conducted and included in the FS. Weyerhaeuser needs to work with MDEQ to develop a site-specific mixing zone-based criterion. This criterion would then be incorporated into the FS.
10. Sections 4.1.2 and 4.1.3 and 4.1.4 lack a discussion on how the Remedial Action Objectives (RAOs) are met. For example, what are you doing to mitigate the potential for erosion of soil to the Kalamazoo River and Mill Race per RAO 5? An explanation of how each RAO is met by the alternative is needed.
11. RAO 6 is not addressed in the FS. The FS needs to discuss how this RAO is achieved.
12. The individual analysis of the alternatives in Section 5.2 lacks details. This section needs to follow Section 6.2.3 of EPA’s RI/FS Guidance. The guidance provides a series of

questions that should be answered for each criterion. Several of the questions were not answered in Section 5.2 of the FS for the alternatives. The section should be revised accordingly. Some (not all) examples from the Alternative 2 series are listed below. Please ensure the guidance is followed for all alternatives.

- Section 5.2.2, Overall Protection of Human Health and the Environment, Page 172. Need to describe how site risks posed through each pathway are being addressed by the FS are eliminated, reduced, or controlled through treatment, engineering, or ICs. Each pathway is not discussed. Does it meet RAOs? Why is it protective?
 - Section 5.2.2, Compliance with ARARs, Page 173. The detailed analysis should summarize which requirements are applicable or relevant and appropriate to an alternative and describe how the alternative meets these requirements. When an ARAR is not met, the basis for justifying one of the six waivers allowed under CERCLA (see Section 1.2.1.1) should be discussed. Compliance with chemical-specific, location-specific, and action-specific ARARs needs to be addressed for each alternative. The actual determination of which requirements are applicable or relevant and appropriate is made by the lead agency in consultation with the support agency. A summary of these ARARs and whether they will be attained by a specific alternative should be presented in an appendix to the FS report.
 - Section 5.2.2, Long-term Effectiveness and Permanence, Page 173. Magnitude of residual risk and adequacy and reliability of controls were not addressed. See RI/FS Guidance. Also, see Table 6.1 of guidance for questions that should be addressed under this criterion.
 - Section 5.2.2, Short-term Effectiveness, Page 174. See RI/FS Guidance and associated table of questions to be addressed. This section mentions that risks to the community can be mitigated through dust control, but it is not clear if it is referring to dust during transportation or construction. It also does not discuss how you plan to control dust during construction and transportation. Environmental impacts were not addressed.
 - Section 5.2.2, Implementability, Page 174. See RI/FS Guidance and associated table of questions to be addressed. Technical feasibility (construction and operation, reliability of technology, ease of undertaking additional remedial action, monitoring considerations), administrative feasibility, availability of services and materials all need to be addressed per the guidance.
 - Section 5.2.2, Cost, Page 174. See RI/FS Guidance. Discuss accuracy of costs and cost sensitivity. List where the detailed information is located.
13. Cost information for Alternatives 2A and 2D were eliminated. It is not clear why they were eliminated or how the alternatives did not meet the Part 201 ARAR. The “No Action” alternative did not meet ARARs and yet was included in Table 5.1 and Appendix

D. It is not clear whether these alternatives are discussed in the detailed analysis of alternatives or the comparative analysis of alternatives. The reasons why they are not a "viable" option should be discussed in these sections. The cost information for these alternatives should be included in the cost table and Appendix D.

Specific Comments

1. **Section 1.2.2.4, Page 9, Paragraph 5.** There is a typographical error in the first word of the paragraph: it should be "Additives."
2. **Section 1.2.2.4, Page 9 and 10, Paragraph 6.** Hazardous Substances Wastewater Sludge - Delete the last sentence in this paragraph: "~~The U.S. EPA's Technical and Procedural Amendments to the Toxic Substances Control Act (TSCA) Regulations indicates that the potential for PCBs present within the wastewater sludge would not be regulated under TSCA.~~" Rationale: See 40 CFR 761.61(a)(4) which defines polychlorinated biphenyl (PCB) bulk remediation waste to include "PCB sewage sludge, and industrial sludges."
3. **Section 1.2.3.2, Page 11, Regional and Site Hydrology.** Provide the location of the water table at the site in this section. Provide information on the shallow aquifer. The shallow aquifer is the location of the groundwater contamination at the site yet very little detail about this aquifer is discussed. This section should include at least the following:
 - aquifer(s) affected or threatened by site contamination
 - types of geologic materials
 - approximate depths
 - whether aquifer is confined or unconfined
 - surface and subsurface features (e.g., number and volume of tanks, lagoons, structures, and drums at the site)
 - groundwater flow directions within each aquifer and between aquifers and groundwater discharge locations (e.g., surface waters, wetlands, other aquifers)
 - interconnection between surface contamination (e.g., soils, surface water/sediments) and groundwater contamination
 - any groundwater models used and assumptions.
4. **Section 1.2.3.4, Page 13, Current and Past Groundwater Use in the Mill Area.** This section discusses potable and non-potable water at the site. What is the distinction between potable and non-potable water? If it is non-potable, why and how is it classified as non-potable? MDEQ considers all groundwater at the site to be a potential source of potable water. If there is no promulgated State classification, see EPA guidance on groundwater classification: "*Guidelines for Ground-Water Classification Under the [1984] EPA Ground-Water Protection Strategy, Final Draft,*" November, 1986, Office of Ground-Water Protection Publication EPA/440/6-86-007, NTIS Order Number PB88-229067. Unless the groundwater at the site can be classified as non-potable based on the criteria described in this guidance document, the anticipated beneficial use of the aquifer would be as a drinking water source.

5. **Section 1.2.3.4, Page 13, Current and Past Groundwater Use in the Mill Area.** This section discusses several wells located on the site. What will happen to these wells? Will they be abandoned or continued to be used how they are used now? The FS does not discuss what will happen to these wells yet discusses a groundwater use restriction on-Site; though the FS does not go into details on what that restriction will be nor does it detail how these wells will be affected. Table 4.1 does mention that no water supply wells will be installed to prohibit drinking water though does not discuss the existing wells at the site and whether they can continue to be used. If these wells plan to be abandoned, then state that in the FS. If they are not going to be abandoned and plan to continue to be used as “fire wells” or other purposes, those purposes should be documented and an IC would need to be in place regarding their intended use and restricting their use as drinking water wells.
6. **Section 1.2.4.2, Page 105, Nature and Extent of Contamination.** How deep is the groundwater contamination? The section lists the depth of the vertical profiling but not for the monitoring wells. The vertical profiles show groundwater exceedances as deep as 42 feet below ground surface (bgs).
7. **Section 1.2.4.3, Page 120, Previous Response Action.** The consent decree defines the Site as the former mill property up to the top of the banks. Do the boundaries of the northern response areas of the mill property (residential area 1, 2, 3, 4 mixed residential/commercial area 2 and commercial area 4, extend up to the top of the banks along the Kalamazoo River? The maps seem to simply correspond to the redevelopment area and don’t seem to indicate that the property for response action could extend to the top of the bank. The maps should clearly indicate that the response action will apply to the property to the top of the banks of the Kalamazoo River.
8. **Section 1.2.4.2, Page 16, Paragraph 4.** “Site-Wide Historical Fill Material (Portions of All Redevelopment Areas)”. How do the paragraphs listed below the title relate to the title? How do you know the exceedances are all fill related? There is no proof provided that the exceedances are related to fill. If you are assuming that it is related to fill, then the assumption needs to be stated.
9. **Section 2.1, Pages 139-140, Paragraph 4.** 1st and 9th bullets: Delete reference to Part 31 statutory and administrative requirements. (Michigan Compiled Laws [MCL] 324.1201-1221, MCL 324.2101-2195 etc). Part 31 would be an ARAR for the Site. For example, groundwater venting from the site would be required to meet GSI criteria.
10. **Section 2.2, Page 141, Paragraph 7.** The paragraph states “The PRGs for each chemical of concern (COC), in each medium of concern, for each pathway to be addressed, within each redevelopment area for human health, with the exception of human direct contact/ingestion/inhalation exposure to soil impacted with arsenic, are the Part 201 Generic Residential or Non-Residential Cleanup Criteria, as applicable based on the anticipated future land use of the redevelopment area.” Then later in the section it states “The PRGs for human direct contact/ingestion/inhalation exposure to soil impacted with

arsenic are the Site-specific risk-based concentrations (RBCs).” Based on the alternatives proposed, the “A” and “B” alternatives both have the PRGs for arsenic based on Part 201, and only the “C” and “D” alternatives are the site-specific risk-based concentrations. Please clarify this section.

11. **Section 2.2, Page 143, Paragraph 1.** Delete this paragraph and replace with the following:

Under 40 C.F.R. § 761.50(b)(3), PCB remediation waste is “regulated for cleanup and disposal in accordance with 40 C.F.R. § 761.61.” 40 C.F.R. § 761.3 defines PCB remediation waste as “waste containing PCBs as a result of a spill, release, or other unauthorized disposal ... at any concentration from a source not authorized for use under TSCA.” PCB remediation waste includes “environmental media containing PCBs, such as soil and gravel, dredged materials, such as sediments, settled sediment fines, and aqueous decantate from sediment.” 40 C.F.R. § 761.61(a)(4) defines “bulk PCB remediation waste” to include “soil, sediments, dredged materials, muds, PCB sewage sludge, and industrial sludges.” Specifically, TSCA regulations found at 40 C.F.R. § 761.61(c) allows for a risk-based method for cleanup or disposal of PCB remediation waste when EPA finds that the method will not pose an unreasonable risk of injury to human health and the environment. The alternatives may achieve the TSCA ARAR by meeting the TSCA cleanup levels in 40 CFR 761.61 set forth in the Table below, which have been selected as PCB PRGs for the Site:

Medium		Pathway	PCB PRG
Soils	Human Health	High Occupancy Residential	1.0 mg/kg ^a
		High Occupancy with cap	1 - 10 mg/kg ^b
Subsurface Soils	Human Health	Residential	1.0 mg/kg ^a
		High Occupancy with cap	1-10 mg/kg ^b
Groundwater	Groundwater-Surface Water Interface (GSI)		0.2 µg/L ^c

Notes:

^aBased on high occupancy cleanup level (without cap restriction) set forth in 40 C.F.R. § 761.61(a)(4)

^bBased on 40 C.F.R. 761.61(a)(4) with restrictive covenant maintaining a cap if contamination remains between 1 and 10. See section 40 CFR 761.61(a)(7) for cap requirements.

^cThe groundwater criteria protective of surface water is a PRG where the GSI is present. (MCL 324.20120e and Part 31).
mg/kg = milligrams per kilogram, µg/L = micrograms per liter, N/A = not applicable

12. **Section 2.2.2, Page 144, Paragraph 3.** This paragraph states “Table 2.4 presents the PRGs for direct contact exposure to arsenic in soil.” The table presents the risk based concentrations for direct contact exposure to arsenic in soil which are proposed as PRGs. Please clarify. The table does not present the PRGs for arsenic which are proposed for the A and B alternatives.

13. **Section 2.3, Page 146, Paragraph 2.** RAO 1 states “Prevent human direct contact exposure to soil impacted with VOCs, SVOCs, PCBs, metals (except arsenic), and other inorganics in exceedance of the Michigan Act 451, Part 201 Cleanup Criteria and human direct contact/ingestion/inhalation exposure to soil impacted with arsenic posing excess carcinogenic risk levels of 10^{-4} to 10^{-6} or a non-carcinogenic hazard level of 1.0.” Does Alternatives 2B and 3B actually meet this RAO as written since it is using the iterative approach to meet arsenic Part 201 levels and not risk based levels? EPA suggests revising the RAO to state “Prevent human direct contact exposure to soil impacted with VOCs, SVOCs, PCBs, metals, and other inorganics in exceedance of the PRGs.”
14. **Section 2.3, Page 146, Paragraph 2.** RAO 8 states “Restore groundwater impacted with metals at concentrations above the Michigan Act 451, Part 201 Generic Residential Cleanup Criteria to beneficial use.” This should be changed to “Restore groundwater impacted with metals at concentrations above the PRGs to beneficial use.” Depending on what groundwater remedy is selected, the PRGs for this RAO could be MCLs instead of Michigan Part 201 Cleanup Criteria.
15. **Section 3.2.1, Page 150, Paragraph 0.** One of the assumptions in calculating excavation amounts is “Areas and volumes for multiple sample locations within a reasonably close proximity to one another at equivalent elevations, with comparable analytical results for COCs and with related operational history, were identified as a larger area under the assumption that the surrounding area was impacted at similar levels as those exhibited at single sample points.” How are you going to prove that this assumption is accurate and that significant contamination is not left in between these areas? For example, in Figure 3.3, how do you know that there is not significant contamination between SB-140 and SB-137? Will this be conducted in the pre-design investigation (PDI)?
16. **Section 3.2.2, Page 153, Paragraph 2.** This paragraph states that the monitoring wells that are considered as potential points of compliance to further assess the future migration of metals in groundwater relative to the Part 201 DWC are MW-21S/D, MW-9, MW-20, MW-14, MW-13, and MW-12S/D. This statement may be correct for compliance with Part 201 requirements for meeting groundwater criteria for MDEQ, however according to the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), a potential drinking water aquifer would need to be restored to beneficial use throughout the site (compliance with MCLs). With RAO 8, restoration is throughout the site and therefore all wells would be considered compliance points.
17. **Section 3.2.2, Page 154, Paragraphs 4 and 5.** See Appendix C comments regarding background and revise text in section accordingly.
18. **Section 4.1.2, Page 161, Paragraph 1.** Add/edit the following bullets as marked and bolded:
- Designation of an area for use as a raised bed community garden for residential properties **and restrictive covenant prohibiting gardens in other areas.**

- Implementation of a deed **restrictions requiring maintenance of caps** for areas of contamination remaining in place ≥ 1 mg/kg and ≤ 10 mg/kg for high occupancy areas, if applicable.
 - **Installation of permanent markers on the property identifying depth to which digging is prohibited. Enroll property in state wide utility location program to identify areas where digging is prohibited.**
19. **Section 4.1.2, Page 159, Paragraph 5.** This lists the Alternative 2 series titles. Is Alternative 2A meeting Part 201 Generic Criteria for Residential or both Residential and Non-Residential? Does Alternative 2C and 2D meet Part 201 Generic Criteria? Be consistent and clear. Also, clarify for the 3-series alternatives in Section 4.1.3.
 20. **Section 4.1.2, page 160, Paragraph 0.** This paragraph discusses all of the Alternative 2-series and states “Section 3.2.1 presents a summary of general approaches utilized when developing the conceptual excavation areas; specific details regarding excavation areas are presented in Appendix D.” Appendix D does not contain details for Alternatives 2A and 2D since they were eliminated. Please clarify.
 21. **Section 4.1.2, page 160, Paragraph 0.** This paragraph states “The cap will be constructed in accordance with the requirements of Michigan Act 451, Part 115.” Is there a Federal Regulation/ARAR that it also needs to be constructed in accordance with? If so please list and include in the ARAR table.
 22. **Section 4.1.2 and 4.1.3, Page 160 and 163.** Both sections state that “A pre-design investigation would be completed to evaluate the vertical and horizontal extent of impacts identified in soil during the RI.” In the FS, CRA states that it will evaluate the vertical and horizontal extent of impacts, yet in Appendix D, it only discusses the horizontal extent and states that the vertical extent has been established. Please clarify. Verification sampling should be conducted in the vertical extent as well. Is it a reasonable assumption that the results from the PDI will not cause a significant increase in the cost of the selected remedy?
 23. **Section 4.1.2, page 161, Last paragraph.** This paragraph states “Based on the future residential use of the Site under this scenario, excavation of materials exceeding the appropriate PRGs will be conducted. The estimated volume of materials to be removed during this option ranges from 20,177 to 51,370 cubic yards.” Are the 2 series alternatives based on residential and non-residential or just residential? Please clarify. Also, the estimated excavation of cubic yards should be broken out based on each alternative. The estimated volume of materials needed for the cap on each alternative should also be provided. The distinction between each alternative should be apparent (i.e., the differences between excavation volume, materials for cap, PRGs, cost, etc.).
 24. **Section 4.1.2, Page 162, Paragraph 0.** The paragraph states “Consolidation and capping under Remedial Alternatives 2A and 2D will not meet the Part 201 ARAR and, therefore, were not included in the cost estimates or notes, as it is not a viable alternative.” Why and

how do Alternatives 2A and 2D not meet Part 201 ARAR requirements? Explain. No cost estimates or details were provided. According to Section 5.2.2, all the 2-series alternatives meet the ARARs. Also, if it can be demonstrated that Alternatives 2A and 2D do not meet Part 201 ARARs, the text should discuss whether this would also be true for Alternatives 3A and 3D.

25. **Section 4.1.3, Page 164, Paragraph 1.** Add/edit the following bullets as marked and bolded:

- Designation of an area for use as a raised bed community garden for residential properties and **restrictive covenant prohibiting gardens in other areas.**
- Implementation of a deed restrictions **requiring maintenance of caps for areas of** contamination remaining in place ≥ 1 mg/kg and ≤ 10 mg/kg for high occupancy areas, **if applicable.**
- **Installation of permanent markers on the property identifying depth to which digging is prohibited. Enroll property in state wide utility location program to identify areas where digging is prohibited.**

26. **Section 4.1.3, page 163, Paragraph 0.** The paragraph states “Soil Remedial Alternative 3D would include the implementation of the excavation and off-Site removal of materials impacted with VOCs, SVOCs, and PCBs, and the excavation, consolidation and capping, and off-Site disposal of materials impacted with metals above the 10^{-6} risk level an iterative approach for arsenic remediation.” The 3-series alternatives do not contain consolidation and capping. Please revise.

27. **Section 4.1.3, page 164, Last Paragraph.** The paragraph states “The estimated volume of materials to be removed during this option is 20,177 to 51,370 cubic yards.” The estimated excavation of cubic yards should be broken out based on each alternative. Consider using a summary table to show each alternative and the estimated excavation volumes.

28. **Section 4.1.5, Page 165, Paragraph 5.** The paragraph states “Restriction of off-Site groundwater use, including the uppermost, unconfined, water table aquifer that has been identified to have metals present above the PRGs, through the implementation of a deed restriction of local ordinance.” What off-site properties will Weyerhaeuser be obtaining a deed restriction on? Will Weyerhaeuser actually be able to obtain that restriction on private property? There are no off-site wells that demonstrate off-site contamination coming from the site. How will this be demonstrated?

29. **Section 4.1.5, Page 165, Paragraph 5.** The paragraph states “Implementation of a restrictive covenant for contamination remaining in place above Part 201 [Generic Residential Cleanup Criteria] GRCC pursuant to MCL 324.20120b, if applicable.” What is the restrictive covenant? How does the restrictive covenant pertain to groundwater?

30. **Section 4.1.5, Page 165, Paragraph 7.** The paragraph states “The Institutional Controls alternative for groundwater would be used to achieve the following RAOs: RAO 2- Prevent the potential for leaching of contaminants from soil to groundwater and ultimately migrating to surface water at concentrations above the Michigan Act 451, Part 201 Cleanup Criteria for VOCs, SVOCs, PCBs, metals, and other inorganics.... While the implementation of Groundwater Remedial Alternative 2 in and of itself will not address RAO 2 through the prevention of leaching of contaminants from soil to groundwater, exceedances of soil criteria protective of the groundwater pathway, such as the DWPC and GSIPC, relate to the groundwater and will be addressed at the point of compliance in groundwater through the proposed controls and monitoring program.” It is unclear as to how ICs or the description above will achieve this RAO. The description above sounds like the RAO will not be met, but that groundwater will be evaluated at the compliance point. Please clarify how evaluating groundwater criteria at the compliance point will in fact achieve this RAO.
31. **Section 4.1.5, Page 166, Paragraph 5.** See Appendix C for comments on “background” concentrations and revise this section accordingly.
32. **Section 4.1.5, Page 166, Paragraph 6.** The FS text states “Groundwater Remedial Alternative 2 will address RAO 8 because the impacted groundwater is located at a depth which is prohibited by Michigan Public Health law for use as a drinking water source (i.e., drinking water wells at depths shallower than 25 feet bgs is prohibited) and potable water is supplied in the vicinity of the Site by a municipal source. Additionally, beneficial use of the property can still occur through redevelopment independent of the shallow impacts to groundwater because of the aforementioned reasons.” Include the exact citation for the law that you are referring. Michigan Water Well Construction and Pump Installation Code (Part 127, Act 368, PA 1978 and Administrative Rules) R 325.1632(3) refers to a well casing shall extend not less than 25 feet bgs. The FS should be clear on the language that the law states. According to the regulation, a well casing can be permitted to be installed less than 25 feet bgs if potable water is known to exist in that area. This reference does not address RAO 8 as stated in the FS.
33. **Section 4.2.3, Page 168, Paragraph 1.** This section should reference the cost summary tables.
34. **Section 5.2, “Individual Analysis of Alternatives”, Page 170.** The detailed analysis of alternatives should follow the EPA RI/FS guidance. (See General Comment 12). Per Section 6.2.4 of the RI/FS guidance, for the presentation of individual alternatives: “The alternative description should provide data on technology components (use of innovative technologies should be identified), quantities of hazardous materials handled, time required for implementation, process sizing, implementation requirements, and assumptions.” For example, for the 2-series alternatives, the estimated dimensions or area of the capped area was not included, and for the groundwater alternative 2, the timeframe for implementation was not included. Please address each criteria thoroughly and for each alternative. If assumptions have been made, then state them.

35. **Section 5.2, "Individual Analysis of Alternatives", Page 170.** This section demonstrates that the only difference between the 2-series alternatives is cost, though volumes and capping of excavated material should vary per alternative. This should be discussed.
36. **Section 5.2.2 and 5.2.3, Pages 171-178.** These sections mention ICs and engineering controls (ECs) but do not describe what these are. Please list all ICs and ECs or reference the table or section if the table/section is inclusive of all ICs and ECs for the each alternative.
37. **Sections 5.2.2 and 5.2.3, "Exposure Pathway Objectives", Pages 172 and 176.** Alternatives 2A, 2B, 3A, and 3B are addressed by Part 201 versus a site-based arsenic risk concentration. No inhalation or ingestion exposure with other COCs except arsenic? If direct contact includes ingestion, dermal contact, and ambient air, state that and be consistent throughout report.
38. **Section 5.2.5, "Groundwater Remedial Alternative 2 – Institutional Controls", Page 179.** This section should include an estimated timeframe to achieve compliance.
39. **Section 5.3, "Comparative Analysis of Alternatives", Page 180.** See EPA's RI/FS guidance. The purpose of this comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the key tradeoffs the decision maker must balance can be identified. This section lacks a comparison of alternatives against each other. It should not just re-state what was in the previous section, but should compare the alternatives against each other with each criterion. The A, B, C, and D parts of the 2-series and 3-series alternatives are not even mentioned in this section and should be discussed.
40. **Section 5.3.1, "Overall Protection of Human Health and the Environment", Page 180.** Exposure Pathway RAOs, Containment RAOs, and Restoration RAOs. Which RAOs go with which? Be specific on which RAO you are referring to. Need to discuss the degree to which RAOs are met, adequacy, permanence, and reliability of source containment or removal actions, time frame to achieve protection, compliance with Human Health risk-based PRGs, and degree of reliance on ICs to manage potential risks. Which alternative is most protective, least protective, or equally protective? Discuss the strengths and weaknesses of the alternatives against each other. It is not clear as to the disadvantages or advantages of each alternative. The section has demonstrated that A, B, C, and D alternatives of both the 2-series and 3-series are virtually the same. See RI/FS Guidance.
41. **Section 5.3.2, "Compliance with ARARs", Page 181.** This section states "The Soil Remedial Alternative 2 and 3-Series, with the exception of Soil Remedial Alternative 2D, which would require consolidation of impacted materials above the Part 201 Cleanup Criteria and; therefore, would not meet the unrestricted requirement, comply with ARARs identified in Table 2.1." Don't all the 2-series alternatives require consolidation of impacted materials above the Part 201 Criteria, hence the cap? What unrestricted

requirement is this referring to? The conceptual area for consolidation of soil has an engineering control, correct? The section also states "The Groundwater Remedial Alternative 2 complies with ARARs identified in Table 2.1." Does it comply with all the ARARs or just certain groundwater ones? How? It should be specific as to which ARARs it complies with.

42. **Section 5.3.3, "Long-Term Effectiveness and Permanence", Page 181.** This section states "The long-term effectiveness of the containment and removal components of all of the alternatives is easily monitored." There is no containment system in the 3-series Alternatives or groundwater alternatives. This section should compare the difference between the alternatives (i.e., on-site vs. off-site).
43. **Section 5.3.5, "Short-term Effectiveness", Page 182.** This section does not discuss the difference between the on-site and off-site alternatives. For instance, a cap on-site may affect construction workers differently than off-site. Off-site alternatives may have more trucks going through the community. This will also vary between the A, B, C, and D alternatives. The alternatives need to be compared.
44. **Section 5.3.6, "Implementability", Page 183.** At least twice "this alternative" is referred to, however it is not clear as to which alternative is "this alternative". Is it all of the 2-series and 3-series alternatives or one in particular? This section should be comparing the alternatives against each other. One would think the technical feasibility, administrative feasibility, availability of labor and materials may vary for each alternative and especially comparing the 2-series and 3-series alternatives against each other. Yet this section discusses the asbestos abatement, removal of equipment, shoring, etc. which is the same for the entire 2-series and 3-series alternatives. This should be discussed under implementability of each individual alternative since in the comparison they would have the same issues.
45. **Section 5.3.7, "Cost", Page 183.** How do the costs compare? Which alternative is most costly or least costly and why? A discussion is needed.
46. **Section 5.4, "Summary", Page 184.** This section is the summary and conclusions for the alternatives yet it lacks an actual summary. This section should summarize the results of the detailed and comparative analysis that was performed with the criteria.
47. **Figure 1.2.** This figure has too much information on one figure and is difficult to read. Recommend separating into three separate figures: 1) Original Figure 1.2 from the Draft FS showing property layout by redevelopment area, 2) Figure with "Areas," and 3) Figure with sample locations in each redevelopment area. In current Figure 1.2, Area 3A is not labeled or missing from the figure and should be included.
48. **Figure 3.7.** The title should read "2A AND 3A TO" and not "2A AND 31TO."
49. **Table 2.1, "Summary of ARARs".** The following should be adjusted in this table:

Toxic Substances Control Act: 40 CFR 761.61: Add the following to the Comments: "40 CFR 761.61(a)(8) requires deed restrictions requiring maintenance of caps for high occupancy areas with remaining contamination between 1-10 mg/kg. 40 CFR 761.61(a)(7) includes the cap requirements for high occupancy areas with contamination remaining between 1-10 mg/kg.

Safe Drinking Water Act: Add the following to the comments: MCLs (or Part 201 Drinking water criteria where more stringent, or site-specific background where higher) are considered to be PRGs for groundwater.

Michigan Act 451, Part 201: Add the following: Description: Part 201 requires evaluation of the cumulative risk and the cumulative risk may not exceed a carcinogenic risk of 10⁻⁵ or a hazard index of 1. ARAR:. Comment: The cumulative risk at each site area may not exceed a carcinogenic risk of 10⁻⁵ or a hazard index of 1.

MCL 324.20120e: Description: Requires that a response action demonstrate compliance with groundwater/surface water requirements for groundwater venting to surface water; ARAR Comments: For example, MW-7 appears to be a local groundwater discharge to the Kalamazoo River on an intermittent basis. Compliance with part 201 GSI requirements will be confirmed through monitoring.

Michigan Act 451, Part 31, MCL 324.3109b: Please edit as follows: ~~Identifies definition of completion of Part 31 remedial actions.~~—"States that remedial actions that satisfy Part 201 satisfy this section."

50. **Table 4.1, "Institutional Control Matrix"**. For each alternative please include a separate IC matrix table. Include at least one line for each area e.g. Residential Area 1, Residential Area 2, etc. For each separate redevelopment area, identify contaminants levels that will remain for each area under each alternative. For each area also include buildings and other caps that will remain for each area and the associated restrictions. Include restrictive covenants under Part 201 for such restrictions.

In addition, please edit with bolded text as follows:

4th line: PCBs ≥ 1 ppm and ≤ 10 ppm to be designated as **capped** high occupancy areas: Deed restriction consistent with **capped** high occupancy use as required by 40 CFR 760.61(a)(7) and (8) must be implemented **whereby owner agrees to maintain the cap in perpetuity.**

7th line: Identify bgs below which excavation and gardening would be prohibited. Include installation of permanent marker on the property to identify depth to which excavation and gardening would be prohibited. Include restrictive covenant pursuant to Part 201 as the IC.

51. **Table 5.1.** The table shows that Alternative 3A is "excavation and off-site disposal to residential criteria iterative approach." though in Section 4 it does not mention the iterative approach for 3A. Please clarify.
52. **Table 5.2.** The cost values are missing in the table.

Appendix A - Revised Development of Risk-Based Concentrations for Arsenic in Soil

Specific Comments

Note: this appendix was previously identified as Appendix B in the draft FS.

1. On various figures, many locations are not shown as requiring excavation despite identification of these locations with exceedances of arsenic's risk-based concentration (RBC) in Tables 10, 11, and 12. For the most part, locations in this category are within the footprint of (1) existing buildings or (2) buildings that have been demolished (see Figure 3.40 – Buildings 9A, 9B, 9D, 9E, 9F, and 23). Tables 10, 11, and 12; Figures 3.1 through 3.40; and related text documenting and describing areas where soil excavation is proposed as part of one or more alternatives must be rendered consistent, or inconsistencies must be explained. Several specific issues that should be addressed in the notes/explanation include:
 - Figures and text should consistently and accurately identify locations with arsenic concentrations exceeding RBCs (listed in Tables 10, 11, and 12) that are not shown as proposed for excavation (Figures 3.1 through 3.40). Almost all of the figures that do not do so (for example, Figures 3.16, 3.26, 3.36, 3.38, and 3.40) include no notation or explanation as to why locations listed in Tables 10, 11, and 12 are not shown as proposed for excavation; each of these figures should include such a clear and accurate note/explanation regarding this. For example, although Figure 3.40 includes such a note, even this note, which states that all soil beneath demolished buildings (Buildings 9A, 9B, 9D, 9E, 9F, and 23) is assumed to remain (and, presumably not be excavated), is incorrect. (Note: it is unclear if the demolition of these buildings resulted in removal of building slabs and if any remaining slabs are intended to become engineered barriers that may require institutional controls [ICs]). Figure 3.40 also includes numerous locations listed in Table 12 that are under Buildings 10, 11, 11A, 12, 15, 16, 17, 18, and 19, which are not proposed for demolition. All figures should be revised as noted above to provide a clear and accurate note/explanation as to why some soil locations are not proposed for excavation. (Note: Section 1.2.2.2 of the FS states that the above-listed buildings have been “designated as historical structures and are not anticipated to be demolished; however, will be redeveloped/renovated/reused”). Also, it is not clear why the footprint of a demolished building should provide any protection from or interruption of potential exposure to elevated arsenic concentrations in soil. The note on Figure 3.40 should be revised to justify retaining elevated arsenic concentrations in the footprint of a demolished building. The text of the FS addressing excavation alternatives must also include, at a minimum, an acknowledgement of retaining elevated arsenic concentrations in soil at locations under current, demolished, or future buildings, as appropriate.

- Each note/explanation should consider whether any building currently covering a location with arsenic concentrations exceeding an RBC has been factored into or considered as part of the site development plan. If the currently present building overlying elevated arsenic concentrations in soil will not be part of future development and is slated for future demolition, protection from potential exposure provided by the currently overlying building may not be present in the future, and the note/explanation must address this issue. Also, the explanation on Figure 3.40 that locations are in the footprint of demolished buildings is not sufficient. If the buildings have been demolished, future receptors may be exposed to elevated arsenic concentrations. The explanation on Figure 3.40 must be revised accordingly.
 - Notably, some locations within existing buildings are currently proposed for excavation, while other locations under the same building footprint are not proposed for excavation. As an example, on Figure 3.36, location SB-243 (under the footprint of Building 7) is proposed for excavation up to 2 feet below ground surface. Locations SB-240, SB-241, and SB-244 (also under the footprint of Building 7) are identified as exceeding an arsenic RBC in Table 12, but are not proposed for excavation. All notes/explanations should be comprehensive and consistent.
2. The revised FS should include a general discussion of proposed alternatives that will retain elevated arsenic concentrations in soil assuming protection from potential future exposure to this contaminated soil because it is beneath a building. This discussion is necessary so that future land use (beyond the currently proposed development) does not unknowingly uncover and expose elevated arsenic concentrations in soil at such locations. Also, use of existing buildings as an engineered barrier preventing or interrupting potential exposure to contaminated soils will require implementation of ICs, which the FS must address.

Appendix B - Revised Ecological Risk Assessment Comments

Note: this appendix was previously identified as Appendix C in the draft FS.

Appendix B Response to EPA Comments

1. **Response to EPA Specific Comment No. 5. Appendix C, Section 6.** The original comment noted that the toxicity reference values (TRV) to be used in the risk assessment had been proposed and approved previously, and should be applied without modification. Otherwise, it would appear as if one is “shopping” for toxicity values. Also, as stated in the comment, discussion of the TRVs and their conservativeness should be part of the uncertainty section, and should not be used to calculate the final PRG. Therefore, the original comment should be addressed as requested.

The final conclusions of the risk assessment should present a weight of evidence discussion that takes into account all information available on whether the site poses significant risk to the ecological community at the site. This discussion should take into account the conservative nature of the calculations, risks identified by using either the no observed adverse effect level (NOAEL) or the lowest observed adverse effect level (LOAEL) TRVs, quality of the habitat present, and likely development of the site into a significant ecological habitat in the future.

Appendix B Specific Comment

1. **Response to EPA Comment No. 11. Appendix C, Table 5.9.** The original comment requested the full reference for “U.S.EPA Region 9,” and the response noted that the table would be modified as requested. However, that requested information was not subsequently added to the table included in the revised report. This additional information should be added as requested.

Appendix C - Revised Evaluation of Part 201 GSIC and DWC Exceedances in Groundwater Comments

Note: this appendix was previously identified as Appendix D in the draft FS.

Appendix C General Comments

1. The information provided in Appendix C is incomplete. The text in Appendix C refers to Attachments A and B; however, Attachment B is not provided in the electronic version of the revised FS report, and neither attachment is provided in the hard copy version of the report.
2. The choice of background or upgradient wells is problematic, as stated in Appendix C Specific Comment 2 below. Any comparison to or use of groundwater analytical results from these three wells (MW-3, MW-16, and MW-17) as representative of background groundwater conditions is highly uncertain. A distinction must be made between these wells as hydraulically upgradient (based on groundwater elevations) and these wells as representative of background conditions (not potentially impacted by site contaminants). Therefore, based on the information presented in the remedial investigation and revised FS report (specifically Appendix C), background groundwater concentrations have not been adequately established for the site. Revision of Appendix C thus should occur to remove the current background groundwater-related elements.

Appendix C Specific Comments

1. **Section 3.0, Page 2, Paragraph 2.** The text states, "This concentration is well below the MDEQ screening level for mercury of 0.2 microgram per liter ($\mu\text{g/L}$) for venting to groundwater presented in MDEQ's policy and Procedures Number: 09 014...." Because the identified policy pertains to the groundwater/surface water interface (GSI), the sentence should be revised to read "...venting to surface water [from groundwater]...."
2. **Section 5.0, Page 4, Paragraph 2.** Monitoring wells MW-3, MW-16, and MW-17 were identified as upgradient monitoring wells, principally because these wells are "considered to be upgradient of historical operations at the Site based on groundwater flow direction." While these three wells may be hydraulically upgradient of the main plant buildings and site operations based on groundwater flow maps, all three of these wells are within areas proposed for soil excavation (for example, see Figure 3.40). Soil near all three well locations has elevated concentrations of arsenic (one of the COCs identified for development of background concentrations) and other metals. Additionally, as stated in Appendix C, well MW-3 has the highest reported mercury concentration in groundwater at the site, as well as groundwater concentrations of aluminum and lead exceeding Part 201 drinking water criteria (DWC). Well MW-16 is within an area where excavation is to occur partly because of presence of elevated PCB concentrations. Altogether, locations of all three wells within areas proposed for soil excavation suggests strongly that these wells may be within areas impacted by site operations, despite their locations hydraulically upgradient of the main plant buildings and operational areas. Therefore, reliance on statistics based on constituent concentrations in groundwater from these three wells is questionable at best. Establishing regional background groundwater

concentrations may require installation of off-site groundwater wells or access to groundwater analytical results from off-site locations obtained by others. As noted in Appendix C General Comment 2, Appendix C in general and Section 5.0 in particular should be revised to remove the current background groundwater-related elements.

3. **Section 5.0, Page 4, Paragraph 2.** A complete reference should be provided for the citation “MDEQ, 2002.”
4. **Section 5.0, Page 5, Paragraph 1.** The text introduces the procedure of subtracting background groundwater concentrations calculated using EPA and MDEQ methodologies from concentrations measured at on-site groundwater wells. Use of such “net” results is generally considered unacceptable. Receptors are potentially exposed to total groundwater concentrations, not only that portion found to exceed background. Similarly, total groundwater concentrations and not simply site-related concentrations may discharge to surface water. Also, as stated above, calculations of “background” concentrations by use of results from wells very likely to have been impacted by the site are highly uncertain and problematic. Appendix C should be revised to remove the presentation, discussion, and use of such a “net” groundwater approach. (Note: the request of Figures 2a/2b of Appendix C was for conceptual purposes only to understand how the site may be contributing to groundwater assuming there were “true” background locations.)

Appendix D – Cost Estimates Comments

Note: this appendix was previously identified as Appendix E in the draft FS.

1. The assumptions for cost in Appendix D mention the abandonment of several monitoring wells on-site. Some of the monitoring wells are listed as being replaced as “necessary” and MW-16 was listed as abandoned and not replaced. Abandonment of monitoring wells and the determination of whether they are replaced or not would need approval by EPA. MW-16 is located in a contaminated area and does indicate contamination of groundwater in that area. If abandonment of a monitoring well is necessary for excavation, the cost estimates should include replacement of the well. If it is justified that a monitoring well is not needed and can be abandoned, it should be done so in the design phase of the remedy.

REMEDIAL ACTION OBJECTIVES
FORMER PLAINWELL, INC. MILL PROPERTY
PLAINWELL, MICHIGAN

PRELIMINARY WORKING DRAFT

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Media of Concern	Redevelopment Area	Receptors with Cumulative Risk $>10^{-4}$ and/or HI >1.0	Human Health Exposure Route	Major Contributors	Receptors with Cumulative Risk $\geq 10^{-4}$ and/or HI >1.0	Human Health Exposure Route	Major Contributors
Soil	Residential Area 1	None	N/A	N/A	Future Resident Future Commercial Worker Future Utility Worker Current/Future Trespasser Future Recreational User	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic Pentachlorophenol
	Residential Area 2	Future Resident	Indoor Air Inhalation of Vapors	Benzene	Future Resident Future Commercial Worker Future Utility Worker Future Recreational User Future Commercial Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Arsenic Benzene
	Residential Area 3	None	N/A	N/A	Future Resident Future Commercial Worker Future Utility Worker Current/Future Trespasser Future Recreational User	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic
	Residential Area 4	Future Resident	Indoor Air Inhalation of Vapors	Benzene	Future Resident Future Commercial Worker Future Utility Worker Current/Future Trespasser Future Recreational User Future Commercial Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Benzo(a)pyrene Dibenz(a,h)anthracene Arsenic Total PCBs Benzene Ethylbenzene Xylene Mercury
	Waterfront Plaza	None	N/A	N/A	Future Resident Future Commercial Worker Future Utility Worker Current/Future Trespasser Future Recreational User	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic
	Mixed Residential/ Commercial Area 1	None	N/A	N/A	Future Resident Future Commercial Worker Future Utility Worker Future Recreational User Future Resident	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Arsenic Tetrachloroethene
	Mixed Residential/ Commercial Area 2	Future Resident	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic	Future Commercial Worker Future Utility Worker Future Construction Worker Current/Future Trespasser Future Recreational User Future Resident Future Commercial Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenz(a,h)anthracene Arsenic Thallium Benzene Ethylbenzene Tetrachloroethene Mercury
	Commercial Area 1	None	N/A	N/A	Future Commercial Worker Future Utility Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic

REMEDIAL ACTION OBJECTIVES
FORMER PLAINWELL, INC. MILL PROPERTY
PLAINWELL, MICHIGAN

PRELIMINARY WORKING DRAFT

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	Commercial Area 2	None	N/A	N/A	Current/Future Trespasser Future Commercial Worker Future Utility Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation)	Arsenic
	Commercial Area 3	None	N/A	N/A	Future Commercial Worker Future Utility Worker Future Commercial Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Arsenic Benzene Mercury
	Commercial Area 4	None	N/A	N/A	Future Commercial Worker Future Utility Worker Current/Future Trespasser Future Recreational User Future Commercial Worker	Direct Contact (Incidental Ingestion Dermal Contact, & Ambient Air Inhalation) Indoor Air Inhalation of Vapors	Arsenic Total PCBs Benzene Tetrachloroethene
Groundwater	Residential Areas 1 to 4 and Mixed Residential/ Commercial Areas 1 and 2	Future Resident	Future Potable Groundwater	Arsenic Hexavalent chromium Iron Manganese Antimony Cadmium	Future Resident	Future Potable Groundwater	Arsenic Hexavalent chromium Iron Manganese Antimony Cadmium
	Waterfront Plaza and Commercial Areas 1 to 4	None	N/A	N/A	None	N/A	N/A